

REMARKS/ARGUMENTS

The Office Action of January 11, 2006, has been carefully considered.

It is noted that claims 67, 69-74 and 82-85 are rejected under 35 U.S.C. 102(b) over JP 61-016817 or, in the alternative, under 35 U.S.C. 103(a) over JP 61-016817 in view of the patent to Johnson.

Claims 26, 31-37, 45-48, 51-54, 63-67, 69-74 and 82-85 are rejected under 35 U.S.C. 103(a) over Johnson in view of JP 61-016817.

Claims 38-44 and 75-81 are rejected under 35 U.S.C. 103(a) over Johnson in view of JP 61-016817, and further in view of the patent to Vandas.

Claim 49 and 86 are rejected under 35 U.S.C. 103(a) over Johnson in view of JP 61-016817, and further in view of JP 07-314477.

Claim 50 is rejected under 35 U.S.C. 103(a) over Johnson in view of JP 61-016817, and further in view of the patent to Holtzberg.

Claims 55-59 are rejected under 35 U.S.C. 103(a) over Johnson in view of JP 61-016817, and further in view of the patent to Jones.

Claims 60-62 are rejected under 35 U.S.C. 103(a) over Johnson in view of JP 61-016817, and further in view of Jones and the patent to Daskivich.

Claims 75-81 are rejected under 35 U.S.C. 103(a) over JP 61-016817 in view of Johnson and further in view of Vandas.

Claim 86 is rejected under 35 U.S.C. 103(a) over JP 61-016817 in view of Johnson, and further in view of JP 07-314477.

In view of the Examiner's rejections of the claims applicant has canceled claim 51 and amended claims 26, 52, and 67.

It is respectfully submitted that the claims now on file differ essentially and in an unobvious, highly advantageous manner from the processes disclosed in the references.

The references have all be previously discussed to various extents in prior amendments. Those comments remain applicable and applicant incorporates them herein by reference in order to avoid redundancy. The following additional comments are provided.

According to the presently claimed invention, a supporting core is prepared by plastic deformation of a shape-stable perform. The perform creates the hollow space in a fiber-reinforced component. To manufacture the component the perform is filled in a first mold. Between the first mold and the supporting core there is a void. The void is filled with fiber material. A plastic matrix is injected into the void thereby filling the void and surrounding the fiber material. The plastic matrix hardens and polymerizes by applying heat and tempering. The applied heat also transfers to the supporting core. This causes the supporting core to heat up to its melting temperature. The melted material flows through openings out of the component leaving no residues in the inside of the component. Thus, a hollow fiber-reinforced component remains. The molten supporting core material flows in the second mold and shapes a new perform again. In the second mold the new perform is shaped and after releasing the new perform out of the second mold the new perform is plastically deformed to the new supporting core. The new

supporting core goes to the first mold again. The process can be repeated over and over without a loss of supporting core material (i.e. wax) and with a minimum loss of heat.

If the temperature of the supporting core remains at about the temperature level at which the supporting core is formed, no shrinking or only minimal shrinking occurs with the supporting core. Temperature related shrinkage is one of the main problems of such processes. The waxes used show a rather high shrinking rate and it is advised to have the support core at the elevated temperature when it is inserted in the mold and during injection of the plastic matrix. Thus, to get the desired form of the fiber-reinforced component. In addition, the injected plastic matrix is not cooled by a cold supporting core and the energy needed to melt the supporting core at the end of the molding process is minimal.

JP 61-016817 is silent about the use of a solidified wax body once it is shaped in the mold. There is no mention that the molded wax body is used at about the forming temperature as the inner mold in a RTM-process.

Johnson teaches an RTM process that provides a preform positioned within the cavity of an RTM molding tool. The preform may be a foam core or, as one of several alternatives, can be a "lost core" that comprises wax, fusible metal, resinated sand or the like (see column 8, lines 18-20 at Johnson). Johnson is silent about any temperature maintained during the molding process and is furthermore silent about any temperatures or differences in temperature between the cavity of the RTM molding tool and the preform.

Thus, JP 61-016817 does not anticipate the presently claimed invention, and furthermore, a combination of Johnson and JP 61-016817 does not teach the features recited in the claims presently on file.

In view of these consideration it is respectfully submitted that the rejection of Claims 67, 69-74 and 82-85 under 35 U.S.C. 102(b) or, in the alternative, under 35 U.S.C. 103(a), and the rejection of Claims 26, 31-37, 45-48, 51-54, 63-67, 69-74 and 82-85 under 35 U.S.C. 103(a) are

overcome and should be withdrawn.

The patent to Vandas teaches a plate warmer. The wax filling works as a heat storage medium. The wax is melted to store the melting heat and the melting heat is transferred to the plate to keep food warm and by transferring the heat the wax solidifies once again. The wax is trapped between shell members. All air is removed from the cavity in which the wax is maintained. The members are sealed to secure an air tight and waterproof environment. The reference leaves no room for any interpretation of the plate warmer as a preform for an RTM-process. The wax is sealed in a cavity and no opening to remove the wax is proposed. If one were to look at the wax as being a preform, no room is available for the fibers and the plastic matrix to be injected. There is not the slightest hint of using the plate warmer technology taught by Vandas as a mold or a preform in an RTM-process. Thus, applicant respectfully submits there is absolutely no motivation for combining the teachings of Vandas with either Johnson or JP 61-016817.

In view of these considerations it is respectfully submitted that the rejection of claims 38-44 and 75-81 under 35 U.S.C. 103(a) and the rejection of claim 75-81 under 35 U.S.C. 103(a) over a combination of the above discussed references is overcome and should be withdrawn.

JP 07-314477 discloses a compression mold. Applicant respectfully submits that the teachings of this reference add nothing to the teachings of Johnson and JP 61-016817 so as to arrive at the presently claimed invention as discussed above in connection with the independent claims.

In view of these considerations it is respectfully submitted that the rejection of claims 49 and 86 under 35 U.S.C. 103(a) over a combination of the above discussed references is overcome and should be withdrawn.

The patent to Holtzberg discloses a method for molding composite structural plastic and objects molded thereby. The Examiner combined this reference with Johnson and JP 61-016817

in determining that claim 50 would be unpatentable over such combination. Although Holtzberg may mention melting the core of the mold, there is absolutely no teaching concerning leading the melt directly to the mold for molding a new preform. Furthermore, Holtzberg does not describe an RTM-process. The fibers are parts of the plastic matrix. Thus, Holtzberg is not a reference which provides any suggestions concerning the presently claimed invention. Thus, a combination of Johnson, JP 61-016817 and Holtzberg does not teach the presently claimed invention.

In view of these considerations it is respectfully submitted that the rejection of claim 50 under 35 U.S.C. 103(a) over a combination of the above discussed references is overcome and should be withdrawn.

The patent to Jones discloses a composite structure. The Examiner combined this reference with Johnson and JP 61-016817 in determining that claims 55-59 would be unpatentable over such combination. Jones also does not describe an RTM-process. In an RTM-process the preform is placed in the outer mold and then the fibers are filled in the space between the preform and the outer mold. Eventually the space is filled with the plastic matrix. In Jones the preform melts and the melt applies the pressure to the composite material. No plastic matrix is injected into a hollow space. Thus, there are no similarities between the teachings of Jones and the presently claimed invention. Thus, a combination of Jones, JP 61-016817 and Johnson does not teach the presently claimed invention.

In view of these considerations it is respectfully submitted that the rejection of claims 55-59 under 35 U.S.C. 103(a) over a combination of the above discussed references is overcome and should be withdrawn.

The patent to Daskivich discloses a silicone coated injection moldable thermoplastic material. The Examiner combined this reference with Jones, JP 61-016817 and Johnson in determining that claims 60-62 would be unpatentable over such combination. At column 3, line 33 Daskivich teach “a volumetric expansion of less than 5% when heated...” The volume expansion refers to “additional resins” and not to the wax. The resins are ethylene/vinyl acetate

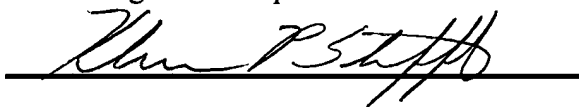
polymers, ethyl cellulose and the like (see column 3, line 22 of Daskivich). The presently claimed invention does not relate to such components used as either a wax or in any combination of wax. Thus, Daskivich has no relation to the presently claimed invention. Therefore a combination of Daskivich, Jones, JP 61-016817 and Johnson does not teach the presently claimed invention.

In view of these considerations it is respectfully submitted that the rejection of claim 60-62 under 35 U.S.C. 103(a) over a combination of the above discussed references is overcome and should be withdrawn.

Reconsideration and allowance of the present application is respectfully requested.

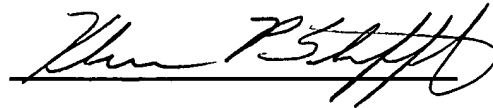
In the event any actual fee is greater than any payment submitted or is inadvertently not enclosed or if any additional fee during the prosecution of this application is not paid, the Patent Office is authorized to charge the underpayment to Deposit Account No. 06-2143.

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